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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05 27 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/865 197

Applicant(s)

HANAKAWA ET AL

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-22 and 24-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 19 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of.
- 1 ☐ Certified copies of the priority documents have been received.
- 2 ☐ Certified copies of the priority documents have been received in Application No. _____.
- 3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

DETAILED ACTION

This First Office Action replaces the initial First Office Action of Nov. 20, 2002 and is in response to Amendment of Feb. 20, 2003.

Priority

Priority to Japanese Patent Applications Nos. 2000-154697 (May 25, 2000), 2000-154699 (May 25, 2000), and 2001-103496 (April 2, 2001) is claimed.

Cancelled Claims

Applicant has cancelled claims 2 and 23 per Amendment of Feb. 20, 2003.

Allowable Subject Matter

Claim 19 is allowed.

Claim 3 is objected to as being dependent upon a rejected base claim (claim 1), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Epstein et al. (US 7,336 B1).

Art Unit: 2871

Per claims 16 and 17: A reflective film containing silver (Col. 7, Lines 6-8), a protective film on the reflective film (Col. 7, Lines 20-22), the reflectance of the protective film for light at a shorter wavelength end of visible light is higher than that for light at a longer wavelength end (Col. 7, Lines 37-48, for example). The reflective film is made of titanium oxide (Col. 7, Lines 23-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5, 15, 20, 22, 29, 30, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US '942 B2) in view of Fukuyoshi et al. (US '562 B1).

Per claims 1, 4, and 20: Tanaka has two metal films (a first Mo layer and a second Mo layer) and these films each have different crystal grain sizes (Col. 6, Lines 16-25). Tanaka does not appear to specify a reflective film on a substrate and where the film contains silver; however, Fukuyoshi has a reflective substrate with a film of a silver alloy (Col. 13, Lines 51-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Fukuyoshi for a highly reflective liquid crystal display. The Examiner further notes that Fukuyoshi has light scattering layers that differ from each other in average particle diameter of scattering particles. Such layers result in improved light scattering, wide viewing angle, and white color (Col. 11, Lines 53-61 and Col. 12, Lines 5-20). A protective film

Art Unit: 2871

liquid crystal technology (See, e.g., Fukuyoshi Col. 18, Lines 22-24 and Col. 20, Lines 62-67).

Alignment or orientation films are inherent in liquid crystal displays for affecting liquid crystal molecular orientation and alignment.

Per claim 5: See Tanaka (Col. 6, Lines 34-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a metal oxide film on the metal film to prevent partial loss of the metal layer (Col. 6, Id.).

Per claim 15: Tanaka claims a liquid crystal device having the recitations of claim 1. It would have been obvious to one of ordinary skill in the art at the time the invention was made to claim an electronic device with the elements of claim 1 because such elements are compatible with small, portable, electronic devices.

Per claims 22 and 35: Tanaka in view of Fukuyoshi discloses the apparatus for the method as claimed by Applicant. Because the device has the elements as claimed in the method, the method steps would follow. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Fukuyoshi for a highly reflective display.

Claims 29 and 30: Tanaka has an electrode of a dual metal layer structure [ABS]. Tanaka has metal layers that are conductors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include these elements for light scattering.

Claims 6-14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US '942 B2) and Fukuyoshi et al. (US '562 B1) as applied to claims 1 and 3-5 above and further in view of Nemoto et al. (US '344 B1).

Per claims 6-14: Tanaka does not appear to specify driver IC connections to the liquid crystal display; however, see Nemoto (Col. 14, Lines 40-65 and Col. 15, Lines 1-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Nemoto to prevent brightness irregularity as taught in Nemoto.

Per claim 21: Tanaka does not appear to have the recitations of claim 21; however, see Nemoto (Figure 14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Nemoto for mounting and for not interfering with display quality.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Epstein et al. (US '336 B1) as applied to claims 16 and 17 in view of Satake et al. (US '787 B1).

Per claim 18: Epstein does not appear to claim a refractive index of 1.8 or more for the protective film; however, Satake has dielectric films including titanium oxide and these films have a high refractive index of 1.98 and 2.04, for example (Col. 9, Lines 38-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Epstein in view of Satake to selectively vary reflectance within the visible light range as suggested and taught by Satake (Col. 9, Lines 62-67).

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epstein et al. (US '336 B1).

Per claims 24 and 25: Epstein discloses the apparatus for the method as claimed by Applicant. Because the device has the elements as claimed in the method, the method steps would follow. Thus, it would have been obvious to one of ordinary skill in the art at the time the

Art Unit: 2871

invention was made to derive the method from the apparatus as claimed by Epstein to selectively vary reflectance and for color shifting as taught in Epstein.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Epstein et al. (US 7,336 B1) as applied to claims 24 and 25 above and further in view of Satake et al. (US 7,787 B1).

Per claim 26: Epstein does not appear to claim a refractive index of 1.8 or more for the protective film; however, Satake has dielectric films including titanium oxide and these films have a high refractive index of 1.98 and 2.04, for example (Col. 9, Lines 38-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Epstein in view of Satake to selectively vary reflectance within the visible light range as suggested and taught by Satake (Col. 9, Lines 62-67).

Claims 27 and 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsute et al. (US 7,726 B1).

Per claims 27 and 33 and 36: Matsute has two metal / reflective films of silver. Specifically, Matsute has pixel electrodes of silver that function as reflective films (Col. 10, Lines 39-45). Matsute does not appear to specify that the pixel electrodes have different reflectances; however, the pixel electrodes have irregular surfaces (Col. 10, Lines 50-53). Reflectance depends on surface irregularity; thus, the pixel electrodes' irregular surfaces may result in different reflectances. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have irregular major surfaces of different reflectances (and the methods derived therefrom) to selectively scatter light as taught and suggested by Matsute. Note that the other common art elements of these claims have been addressed with regard to claim 1, for example.

Art Unit: 2871

Claims 28, 34, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsute et al. (US '726 B1) in view of Epstein et al. (US '336 B1).

Per claims 28, 34, and 37: Matsute has two metal / reflective films of silver. Specifically, Matsute has pixel electrodes of silver that function as reflective films (Col. 10, Lines 39-45). Matsute does not appear to specify that the films have different resistances; however, Epstein has laminates of silver-alloy films (Col. 8). Because these films have different metal alloys they have different resistances (for example, sulfur has a resistance of $2 \times 10^{12} \Omega$ and indium has a resistance of 8.37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsute in view of Epstein for the device and methods therefrom to selectively scatter light as taught and suggested by Matsute.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US '942 B2) and Fukuyoshi et al. (US '562 B1) as applied to claims 1 and 29 and 30 above and further in view of Matsute et al. (US '726 B1).

Per claim 31: Tanaka does not appear to have metal and reflective films of silver or silver alloys; however, Matsute has two metal / reflective films of silver. Specifically, Matsute has pixel electrodes of silver that function as reflective films (Col. 10, Lines 39-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Matsute for high reflectance.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US '942 B2) and Fukuyoshi et al. (US '562 B1) as applied to claims 1 and 29-31 above and Matsute et al. (US '726 B1) as applied to claim 31 above and further in view of Epstein et al. (US '336 B1). Tanaka does not appear to have a protective film of titanium oxide; however, Epstein has

Art Unit: 2871

such a film as noted. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka in view of Epstein for selective color shifting.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-8741 for regular communications and (703)746-8741 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio

Robert Kim, SPE

JDG

May 15, 2003

JOANTON
PRIMARY EXAMINER